SUPPLEMENT.

The Mining Journal,

RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

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HISTORY OF MINING OPERATIONS IN TEESDALE.

This district, which is interesting both on account of its past history and present aspect, includes an area of about 16 miles by 6 in the north-western part of the county of Durham. The earliest history of mining operations are enshrouded in the mists of obscurity, but from the debris of slag heaps, &c., scattered about they are supposed to date back to an early period, and distinct mention is made of them in the historic records of the time of Edward VI.; but prior to the formation of the present company everything was carried on in a very rude and primitive fashion, and furnished but a very precarious means of subsistence to the scattered population; and want of capital and skill, together with want of fuel for smelting the ore, as wood had previously been exclusively used for this purpose, had so paralysed the energies of speculators that operations were nearly, if not entirely, suspended. It was at this juncture that an incident occurred of a deeply interesting character, when considered in relation to its subsequent results. A lady, who was a member of the Society of Friends, was travelling in the district, in the early part of the reign of William and Mary, and the destitution which she witnessed amongst the working class, on account of the paucity of employment, affected her heart, and enlisted her sympathies on their behalf. Some time afterwards, being at one of the annual gatherings of the Friends in London, and prompted by her philanthropic feelings, she brought the subject before the meeting, and gave it as her opinion that if some of the gentlemen present would turn their attention to the subject, and form a company, they would not only confer a great boon to the destitute part of the population, but secure a satisfactory return for the capital expended. This led to further investigation, which resulted in the formation of a chartered company, under the title of the Governor and Company for Mining and Smelting Lead Ores with Coal, and thus the mineral resources of one district were made instrumental in developing those of another adjacent to it. For the first century after the formation of the company it was very problematical whether the sanguine expectations of the projectors would be realised. Although in some cases a considerable amount of metal was obtained, and in smelting operations the improvements made were of a very satisfactory character, yet the yield of ore was so uncertain, and the pecuniary return for capital expended so small, together with want of unanimity of opinion amongst the agents as regarded the desirableness of trials to be made, that at the latter part of the first century of their existence they got to a minimum of eight men employed in underground operations, and there was great danger of entirely suspending their labours, and investing their capital in speculations of a more certain character; and as this was the turning point in the subsequent history, it may not be amiss to enter rather more into detail. Amongst the plots of ground leased by the company was one named Lodge Syke; this had been previously leased by four local speculators, who after making a number of surface trials with bushing, allowed the take to expire without renewing it, under the impression that there was no prospect of reasonable remuneration. It was now taken up by the company, and for a considerable period with results equally as barren. One of the two agents, who possessed no local sympathies, proposed to entirely suspend operations, and pronounced Teesdale to be so unproductive that he considered it foolish to attempt further to develope its mineral resources. The other agent, warmer in his sympathies towards the population, and sanguine in his hopes of ultimate success, still held out, and even when his coadjutor refused to have any further responsibility in connection with the trials in progress, still persevered, in the midst of discouragements of no ordinary character. At this time one of the parties, who had formerly had the lease of the ground, advised the workmen to try a bush on another part of the plot, and, yielding to his suggestions, they prepared to carry out his advice as a forlorn hope, for they were quite aware that the crisis was come, and upon the success or non-success of the present trial depended whether they should be able to earn their daily bread in their native dale, or whether amongst strangers they should seek for a precarious subsistence, for before this final effort the agent who had so firmly sustained them began to waver, and had given them an intimation that if they continued the trial it must be on their own responsibility. Under these depressing circumstances, we may imagine the sudden revulsion of feeling which would take place when, close to the surface, a vein was discovered richly charged with ore. This gave a new impetus to labour, and those who were able and willing found regular and remunerative employment, and the quantity of mineral wealth obtained was unprecedented in the past annals of the history of mining operations; as a sample, one partnership procured 1200 bings in one year. A crushing-mill was also erected, to facilitate the ore dressing operations, and to diminish the amount of manual labour; and levers were attached to the sieves used for jigging or hutching the bouse, or rougher part of the work, instead of the hand-sieve, which had been previously used, and some time afterwards the German swing buddle was introduced for the separation of the slimes. These changes were mainly attributable to the superintendent, Mr. R. Stagg, who had complete control over all the different departments, instead of allowing a divided responsibility amongst a number of subordinate agents, and from the period when he assumed the administration of affairs a marked improvement manifested itself in every department—the mines were wrought not only with an eye to the profits of the masters, but also to the safety of the workmen; the overmen were selected from the most intelligent, sober, and industrious workmen. A commodious school was erected for the instruction of their children, at a merely nominal charge; provident habits were encouraged, by the formation of a fund for affording relief in times of sickness or old age; and a considerable number of cottages were erected, with gardens attached, which at a low rental were allotted to the most deserving of the workmen. The services of an able medical practitioner were secured to them gratis, and liberal encouragement was given to the different bodies of Christians in their efforts of usefulness. The result of these things has been a most marked improvement in the condition of the population, and in social status and general intelligence they bear a favourable comparison with any other part of the country, for the present superintendent, Mr. R. Bainbridge, treads in the footsteps of his predecessor, and is ever ready to put his hand to every good work, uniting clearness of perception with energy, and courteousness with firmness, and a due regard to the mutual interests of the company and their employees, the result justifies the wisdom of his procedure, and inspires in his subordinates confidence and respect. The number of workmen at present employed, including boys, is about 1200 in the Teesdale district. The principal veins run east and west, and the lode, or inclination of the head of the vein, is to the north. As a rule, the upper plate shales, often reaching the surface, are most productive; in some cases the 12-fm. limestone has yielded considerable quantities of ore, but the deposit in it is very irregular. Generally the whole of the vein is wrought at so much per cubic fathom, and in other cases at so much per bing; the workman pays out of this for drawing; and, if engaged at so much per bing, also for the dressing, which amount is deducted from his yearly account. The principal part of the ore raised is on the manor of the Duke of Cleveland, and a duty is charged of 1-6th. They also have ground leased of Mr. S. Hutchinson, J. Bowes, and of the Bishop of Durham, or the Ecclesiastical Commissioners. In the manor of the latter parties is situated the Cornish Mine, so called because it was originally wrought by some Cornishmen. The exact date when they abandoned it is not known, but amongst the relics left of their labours is a shovel made of oak, and plated with iron, which is now preserved in the museum at Middleton. This vein is at present very productive, and is an exception to the general rule, as it runs north and south; and, although very narrow, is yielding from 1000 to 1500 bings per annum.

The total yield of ore is from 12,000 to 16,000 bings per year. The great bulk of this is galena, or sulphuret of lead. Although the white ores, or carbonates, are also found in limited quantities, the average percentage of lead is about 75, and the percentage of silver 10 ozs. per fother of 21 cwts. As a rule, the ore which produces the worst lead contains the most silver; this is accounted for on the ground that other metals which contain silver in minute quantities are found in combination with the ore, and when subjected to the action of the heat in the furnace, the silver, having a stronger affinity for lead, amalgamates with it in the smelting operations. Both the reverberatory furnace and the Scotch hearth are used, but the former is preferable, as although the expenses are greater in working, yet in quantity and quality of lead produced it more than compensates. The lead from these is next taken to the crystallising house, which contains a number of large pans, capable of containing 6 tons of lead, each of which has a small pan attached. There are seven of these in one row, and the lead from the smelting furnace, or hearth, is put into the fourth, or middle pan, and the small pan attached is also filled with lead of the same quality. The whole is then melted down, and the lead in the small pan raised to a high temperature; but the lead in the large is kept at a low one. As it is only in this state that it assumes its crystalline character, it is retained in this state, during the process of working, by means of a steel paddle, or chisel, attached to a long iron rod, with which one of the workmen keeps stiring it. The other workman now takes a large ladle, perforated with holes, and fills it with the lead. He then draws it out, by means of a windlass, over a small crane. The liquid portion of the lead returns into the pan, and the crystallised portion is delivered by means of the crane into the pan to the right-hand. Previous to again dipping it into the large pan it is inserted into the small one, where the holes in the ladle are cleared of any incrustations which may have adhered to them: 5-7ths are thus removed in the form of lead crystals, and 2-7ths run back into the pan in the form of liquid lead; and it is found in practice that as this process is repeated through the different pans they are able to separate the silver from the bulk of the lead operated on, and what remains to be refined contains about 200 ozs. of silver per fother, instead of 10 ozs., and the lead sent to market is also considered better in quality. Refining, which is the next process, is carried on through the medium of oxidisation. The bottom of the furnace is oval-shaped and portable; it is composed of a ring of iron about 4½ in. deep, with flat bars traversing the bottom about 3 in. apart. It is filled with bone-ashes (mixed with water, impregnated with pearl-ash) until it is about as adhesive as moulders' sand, and firmly compressed with an iron beater, after which it is scooped out with a small spade about 3 in. in depth, and a crust 3 in. in thickness is left at the edges, as a protection to the iron ring; but at the front end of the test, or furnace bottom, instead of the ashes being cut away in an oval form, they are cut out in a straight transverse line, so that there is a solid mass of about 8 in. wide at the front. This is called the head of the test; the object of this is to have a greater body of ashes in which to cut the channel for the litharge, or oxidised lead, to pass off; and, being forced along this channel by the blast, it drops on to the floor, or into an iron pan, through a hole cut through the ashes immediately adjoining the iron ring. The blast is supplied by a fan, and the nozzle of the pipe, or the iron, is about 3 in. by 2 in., oval-shaped, and curved downwards, the object of which is to spread the blast over a greater area of the test, and to cause it to act on the surface of the oxidised lead, and expel it through the channel at the front. After the lead has thus been operated on for the requisite time, the bottom of the test is bored through, and the unoxidised part run out, and the silver pigs, or bottoms as they are called, which are thus obtained are again operated on in precisely the same manner, with only this difference, that the silver test has a recess cut in the bottom of the ordinary working test about 1 in. thick, and as large in area as will contain the silver to be refined. As the lead oxidises the channel is cut deeper, to let it run off, and when the process is nearly completed a bright fire and strong heat is obtained by the use of dry wood for fuel; and when the contents of the bottom have the transparency and reflecting power of the finest mirror, the workmen, or overman, knows the process is complete.

The weight of the silver cakes vary from 800 to 1800 ozs. The litharge produced is run into a reducing furnace, and again brought into the form of metallic lead, which passes through the crystallising process before it goes to market; but when litharge is wanted as an article of commerce, it is found more economical to take out a portion of the silver through the process of crystallisation before operating on it in the refining furnace. In addition to the above processes, there is the slag hearth, where slags from the furnaces and hearths, test refuse, and other wastes, are run by means of a blast; and the calcining furnace, the bottom of which consists of a large square cast-iron pan about 5 or 6 in. deep, where inferior leads are exposed to a fire acting on the surface, which draws the impurities to the top, and being skimmed off, leaves the lead much improved in quality; and being tapped out of the furnace is run into a temporary pan, which the workman runs off at his leisure into the moulds, which being mounted on wheels, when the lead is sufficiently cool, he runs them to the place where they are deposited to weigh ready for the market.

There is altogether about 1400 yards of chimney, terminating in a shaft over 150 ft. in height, which being in an elevated position, is a landmark for a considerable distance. During the passage of the smoke through the chimney it is subjected to a process of filtration, by means of a bed of rubble stones, supported by lintles; while self-acting buckets are suspended above, which are each supplied with water, and the front of the bucket being sloped; when about three-quarters full it empties its contents on to the stone bed, and washes the fume which may have adhered to the stones down into the bottom of the flue; by this means about 150 fothers of lead are secured per annum.

In connection with the smelting-works is a saw-mill, where the timber is prepared for mining or building purposes. The consumption of timber is about 70,000 feet per annum. The saws and other machinery are driven by water power applied to a turbine manufactured by Mac Adam Brothers, Soho Works, Belfast; with a head of 48 feet of water, it runs at about 500 revolutions per minute; and with a full supply of water gives about 17 or or 18-horse power: the quantity of water used is from 1200 to 1500 gallons per minute. After it passes out of the turbine it drives an overshot water-wheel for propelling the fan at the smelting-works. From the pipes which supply the turbine with water there is a branch taken to the smelting-works, and hydrants put in, so that any part of the works can be reached with the hose in case of fire. While thus in the smelting-works there is due economy used to save all that is valuable in the form of ventilation, and mechanical appliances to lighten the labour of the workmen, it is superior as an establishment to any in the North, and the workmen enjoy better health and attain greater age than the other parts of the population.

The same liberal policy is pursued in relation to the mines, especially in connection with ore-dressing. Wherever practicable, machinery is substituted for hand labour; instead of hand-grating, cylinders are used for grating the work prior to going to the crushing-mill; after it passes through it, due attention is paid to sizing, and the Lisburn buddle (the common circular buddle), Brunton's patent slime frame, and Zenner's rotating buddle, are all in operation in an efficient working state. In addition to the above, the ring buddle, which is a local invention, effects a considerable saving of labour. This improvement on the common circular consists in a sheet iron ring 12 or 14 inches broad, which rises as the buddle fills—the speed is regulated by two cone sheaves, by which means it can be made to rise faster or slower, according to the quality of the slimes—the waste by this means is cut off, and carried away with the water. One index of the increase of intelligence on the part of the population is, that there are about twelve circulating libraries in the neighbourhood, to which the company are contributors, in all of which the class of literature is generally good, and some of them are furnished with the best standard works; a reading-room has also been built at Middleton by the company, and furnished by them; but the management is in the hands of the members, who number about ninety. The selection of newspapers and periodicals is good, and the museum attached is enriched with valuable specimens of mineral, and other interesting objects.

THE MONT CENIS TUNNEL, AND MACHINERY.

Mr. Thomas Sopwith, jun., read a very interesting paper at the Institution of Civil Engineers, on Tuesday, descriptive of "The Actual State of the Works in the Mont Cenis Tunnel, and Description of the Machinery Employed."

This tunnel would form the completing link of the Victor Emmanuel Railway, and be the means of putting France and Italy in direct railway communication. The railway on the French side was already opened to St. Michel, in Savoy, and on the Italian side to Susa, in Piedmont. When the whole line was completed, the mails and traffic with India might, perhaps, be advantageously transferred from Marseilles to some Italian port, as the Mediterranean Sea transit would thus be materially shortened.

During the last twenty years many routes had been surveyed and recommended for crossing the great barrier of the Alps. Of these, that by the Mont Cenis was generally considered the most feasible; and it was only a question whether the mountain should be crossed by a series of inclines, or whether a tunnel should be made. In 1857, Messrs. Sommeiller, Grandis, and Grattoni brought before public notice a new system of boring by machinery, instead of by hand labour. A Government commission was appointed to examine and report upon it, and to see if it could be applied to the boring of the tunnel under Mont Cenis. Their report was favourable, and M. Sommeiller and his partners were shortly afterwards charged with the execution of the work.

The ends only were available for attack, it being impossible, as was known from the first, to sink shafts. It was feared that the ventilation would seriously retard, or altogether prevent, the completion of the tunnel; but this fear was uncalled for, as the artificial ventilation in collieries overcame greater natural difficulties, and the ventilating current passed through a longer distance, than could possibly be required in this tunnel. M. Sommeiller also proposed to use compressed air for driving the machinery, and calculated that on its escape a volume of fresh air would be supplied adequate to the requirements of the workmen. The tunnel at the Modane, or French side, was of the following dimensions: 25 feet 3½ inches wide at the base, 26 feet 2¾ inches wide at the broadest part, and 24 feet 7 inches in height; the arch being a semicircle nearly. At Bardonnèche the height was increased 11¾ inches. The exact length between the ends was 7·5932 miles. The present ends would not be the permanent entrances, as it was intended that a curved gallery should leave the tunnel at the north side, 415 yards from the end, and at the south side 277 yards.

At Modane the tunnel was built entirely with stone; at Bardonnèche, for the greater part, the side walls only were of stone, and the remainder of brick. The Bardonnèche end was 434 feet higher than that at Modane. For one-half the length of the tunnel, therefore, from Modane to the middle, the gradient would be 1 in 45½; the other side being driven with only sufficient fall, 1 in 2000, to allow of the water escaping.

When the tunnel was complete, it was expected that there would be a constant current of air from the north to the south; the latter was not only the higher end, but the air was more rarified and exposed to the heat of the sun, whilst the entrance at Modane was under the shade of the mountain.

The establishment consisted at each end of machinery for compressing the air, workshops for making and repairing machinery, offices, storehouses, residences for the engineers, and barracks for the workmen. At Modane the entrance of the tunnel was 328 feet above the bottom of the valley, where the workshops were placed, with which there was a com-

munication by means of an inclined plane, worked by a water balance. Different systems of tunnelling by machinery had been tried in England; amongst others, one by Captain Penrice, R.E., in which it was intended to drive a gallery about 4½ feet diameter, and by means of repeated blows from a heavy frame loaded with knives, to reduce the whole of the excavated materials to small chippings and dust. It seemed, however, to the author that any system of tunnelling must be deficient which did not make so cheap and readily applicable a power as gunpowder available; and that by the trituration of the rock to such small particles, as in Captain Penrice's system, a great amount of work was unnecessarily performed.

In M. Sommeiller's system, whilst machinery was employed for accelerating the progress usually made by hand labour, gunpowder was also available. He had succeeded in producing a compact machine, not weighing more than 6 cwt., which could pierce a common bore-hole, about 1¼ inch diameter, and 3 feet deep, into a rock in twenty minutes, where two miners would have required two hours. Further, he had arranged a moveable support capable of carrying eleven such machines, any one of which could be worked at almost any angle, and of allowing the free action of each, in a gallery 10 feet square. This support could be removed when it was necessary to explode the holes bored by the machines. The machine was of very ingenious construction. It consisted of two parts—one, a cylinder for propelling the borer against the rock; the second, a rotary engine for working the valve of the striking cylinder, turning the borer on its axis at each successive stroke, and advancing, or retiring, the striking cylinder, as occasion required. It gave 250 blows per minute. The effective pressure on the piston in striking was 216 lbs.; the length of the stroke was from 2 inches to 7½ inches. Although simplified as much as possible, the nature of the work the machines performed was so severe, that they were liable to frequent derangement, and a large stock was kept on hand. The cost of each machine was about 80*l*. The compressed air was used at a pressure of five atmospheres above atmospheric pressure, and was conveyed to the "fore-head" of the advanced gallery by a pipe 7⅝ inches in diameter. The advanced gallery was the only place where the machines were used; the enlarging of the tunnel to the full size, walling, &c., were performed by manual labour.

The system of working was to bore eighty holes in the fore-head of the advanced gallery. The frame and machines were then withdrawn, and a set of men charged and fired the holes; afterwards replaced by another set to remove the *déblais*. The division of time amongst the different classes of labour was very variable. It might, however, be averaged as from 6 to 8 hours for the machinists, from 1½ to 2 hours for charging and firing, and from 3 to 5 hours for removing the *déblais*.

Thus there were almost two complete shifts every twenty-four hours. An alignment was made about once in three months, from an observatory at each end. As yet no error had been detected.

Three or four large holes, each about 4 inches diameter, were bored near the centre of the fore-head. These were not charged and exploded, their purpose being to weaken the surrounding rock. The remainder were charged, those adjoining the centre being first fired, and the result of these explosions was a cavity. The remaining holes were then exploded from this cavity outwards.

The workmen were industrious, under circumstances which required more than ordinary perseverance. A premium on their wages was given for more than a certain advancement per day. At the time of the author's visit, one metre per day was the standard. For a progress of $1\frac{1}{10}$ metre per day, $1\frac{1}{10}$ day's wages was paid; 1½ metres, 1½ day's wages; $1\frac{2}{10}$ metre per day, $1\frac{2}{10}$ days's wages; $1\frac{4}{10}$ metre per day, 1½ day's wages. This scale was subject to adjustment every fortnight.

The *déblais* resulting from the explosion of the eighty holes was removed in small waggons. Its removal was well organised, and, considering the circumstances, quickly effected. It would be much accelerated if it were possible to construct an iron frame, strong enough to be placed close to the fore-head at the time of the explosion, and receive without injury the products of explosion, which could be removed *en masse*, or nearly so.

Two descriptions of machines for compressing air were in use—one on the hydraulic ram principle, the other resembling a pump. In the first, the water was admitted, with a pressure of 85¼ feet, into a column, or vessel, containing air, about 14 feet high and 2 feet in diameter. The water by its momentum rushed up the column, compressed the volume of air, and forced it through a valve into a reservoir. The pressure valve being closed, the exhaust valve was opened, and the water fell in the column, at the same time its place was taken by air, and the machine became ready for another stroke. This machine made 2½ strokes per minute, and was capable of supplying about 20 cubic feet of air, compressed to five atmospheres, per minute. The other machine consisted of a horizontal pump and two vertical branches. The piston was surrounded by water, which rose and fell alternately in the two columns: when it rose, compressing the air, and forcing it through the outlet valve; and when it fell, creating a vacuum, which was filled by air at atmospheric pressure.

The tunnel on June 30, 1863, had been driven (including the advanced gallery at Modane) 1092·25 metres, and at Bardonnèche 1450·00 metres. The advancement in June last, at Modane, was at the rate of 4·719 feet per day. At this rate of progress at both ends, the tunnel would be finished in 9 years 2½ months from that time. It was not, however, too much to expect a progress of 2 metres per day at each end, seeing that machines had only been in use at Bardonnèche about two years and a half, and at Modane half-a-year. A great part of the time had been taken up in experiments, and the men were not thoroughly habituated, as yet, to the manipulation of the machines. The machines were also being much improved. With an average rate of 2 metres per day from June 30, 1863, 6 years 7 months would be required for the completion of the tunnel, as compared with 26 years 3 months by hand labour at 1·655 feet per day at each end, the average rate of progress previous to the introduction of the machinery. The machinery in use at Mont Cenis was made, for the greater part, at Seraing, near Liége. M. Sommeiller confidently expected an advancement of 3 metres per day at each end. If that were the average from June 30, 1863, the work would be completed in 4 years 8½ months from that time.

In the advanced gallery at Modane the number of workmen employed during the twenty-four hours was 88 machinists, in two sets of 44 each; 9 chargers in one set; 30 labourers for removing the *déblais*, in one set: 344 men were also engaged in enlarging and walling, giving a total employed underground of 471; and, including blacksmiths, stone-dressers, and other labourers at the surface, there were 700 employed at the tunnel; mechanics, brakesmen, &c., in the workshops, machinery, &c., 240; occasional labourers, 200; or a total at Modane of 1140. At Bardonnèche the number was greater; 1200 to 1400 being generally employed; giving a total of 2540 on the works.

The result of a rough comparison was to show that, in the present development of the Sommeiller system, an advancement three times quicker than by hand-labour might be effected, but at about two and a half times the cost; judging rather of places where it might be generally applied than by the Mont Cenis only. The proportion of two and a half to one increase of cost referred only to what was known as mining charges in the advanced gallery—*i.e.*, wages, tools, candles, and gunpowder. This proportion was notably diminished in the case of a railway tunnel, where enlarging, timbering, walling, laying of rails, &c., were charges common to both systems. In the case of a tunnel through rock, costing, when completed, 30*l*. per yard, the two systems might compare as follows: an increased advancement in favour of machinery of 3 to 1, at an increased cost of 4 to 3.

The ventilation was good in the advanced gallery, the exhaust air from the machines affording an ample supply. During the time of exploding the holes, a jet of air was left open. Further back, where the men were employed in enlarging the tunnel, the ventilation was insufficient. The tunnel was, therefore, being divided with a horizontal brattice—the upper section being in communication with a chimney on the mountain side. The air was intended to pass along the under side of this division, and then return by the upper part, which had an area of 7 square metres.

The works were now performed at the charge of the Italian Government. On their completion the French Government was to pay 760,000*l*. for that portion of the tunnel situated in its territory—one-half the entire length—together with a premium of 20,000*l*. for each year, by which a term of 15 years was reduced, counting from the same time. In addition, the French Government would pay interest at 5 per cent. per annum on such portion of the tunnel as was finished. If, however, the Italian Government did not complete the work within twenty-five years from the time of making the agreement, or if they renounced the works before that time, the French Government was absolved from further payment. If the works were finished, as there was every reason so suppose they would be, in ten years from June 30th, 1863, the French Government would pay 1,287,000*l*. for the construction of one-half of the tunnel, or at the rate of 210*l*. per metre.

MINING IN AUSTRALASIA—MONTHLY SUMMARY.

[FROM OUR OWN CORRESPONDENT.]

ADELAIDE, DEC. 26.—I have but little to communicate since my last; what there is, however, is very satisfactory, and proves how exceedingly rich our colony is in mineral wealth. The very limited amount of capital invested in mining operations prevents a more rapid development of our riches, and I fear it will be some time before we recover the depression caused by the want of success attending some of the companies formed in England for working our mines. But, as I have before remarked, ordinary precaution would, most probably, prevent a recurrence of such bitter disappointment as has been felt, and it is to be hoped that before very long a large amount of attention will be drawn to our extraordinary deposits of metalliferous ores.

The steady improvement of the Yudanamutana Mines, and the progress of mineral discoveries throughout the Far North, should operate as an inducement to capitalists to embark in that most important undertaking—a railway from Port Augusta northwards. I am convinced that it would pay the promoters, and would, at the same time, confer an immense benefit on this colony, and on the northern mines especially.

I have alluded to the improvement in the Yudanamutana Mines. You will, no doubt, have the official report, so that I need say but little, beyond mentioning the fact. On both sections, 135 A and 135 B, the improvement as the depth of sinking increases is said to be very satisfactory. At a depth of from 15 to 20 fms. rich black sulphuret ore, of 50 to 60 per cent., and yielding 3 tons to the fathom, is mentioned in the captains' reports. The ground also appears to become easier and more settled, not that it ever appeared "disturbed," but the mine is said at the present time to show better indications of permanence than at any period since it was opened.

The Wheal Blinman, belonging to the same company, is, also, equally prosperous. A good quantity of rich ore is being raised, and a very large amount of ore will shortly be smelted on the mine. Your readers must bear in mind that what we in this colony call poor ore would give from 12 to 18 per cent. of fine copper, and the poor ores of the Yudanamutana and Blinman Mines would range from 22 or 24 per cent.

The Spring Creek Mine is going on very well, and a few months more will, probably, determine its value. Up to this time it promises to prove a rich and productive mine.

One of the best paying mines now at work is the Talisker Silver-Lead Mine, close to Cape Jervis, in the South. A fine new lode has just been cut at some distance from the lodes previously opened. The proprietors are working the mine cautiously, and seem desirous to avoid making calls, otherwise I believe the quantity of ore raised might easily be increased tenfold, for they have but a limited number of hands employed, and the produce of the mine is only about 80 tons of ore per month. The prosperity of the mine may be understood from the fact that only 12s. 4d. per share on the 3000 shares has been paid up, that amount, added to the proceeds of the ores, having been sufficient to meet all expenses. The shares are saleable at 7*l*. 10s., and inclining to rise. A dividend is expected before long.

The Moonta Company have declared another dividend, the mine continuing as good as ever. The adjoining mines, Karkarilla and Yelta, have not yet shown results rivalling those of their more fortunate neighbour, though the former has improved, and, I believe, in some parts the lode is payable. The Yelta also presents very good indications, and a few tons of very fine grey ore have been raised, but the lode does not yet show a good solid, continuous course of ore.

The Wheal Stuart, three miles south of the Moonta, has been worked for nearly three months, by a small company of adventurers, and the indications are said to be highly promising, a small percentage of copper being found in the "country," which consists chiefly of gossany steatite. Other claims in the vicinity are likewise being tried, with equally encouraging prospects.

The New Cornwall Mine appears to be steadily improving, and, I believe, is paying expenses. The Wallaroo Mines are going on as usual, turning out large quantities of ore. The preparations for re-working the Matta Matta are progressing. The lode at the Bingo has been recovered, carrying good yellow sulphuret. Some improvement has taken place in the Duryea, and the Karkilio property has been sold for 2100*l*., and is likely shortly to be re-worked.

The mines in the Bremer district are steadily improving. At the Worthing Company's Bremer Mine a fine lode has been cut in the 53 fathom level, *below* the slide of ground which had come in, so that any fear as to the lode not going down is now removed. The other parts of the mine are looking well. The Kanmantoo Mine is improving, the ground becoming easier, and the lode yielding 4 or 5 tons of 16 per cent. ore per fathom. The West Kanmantoo Mine is yielding good ore, in paying quantities.

The New Paringa Mining Company is not yet completed, although a trial of the mine on tribute has shown very good results, nine men, in about four months, having raised 30 tons of 20 per cent. ore. This mine would pay from the very commencement, as there is a large quantity of good ore in sight, and an astonishing space of ore-bearing ground exists on the property, which comprises about 170 acres.

The Kanappa Mine, near the South Rhine, is said to be turning out a good quantity of ore of fair quality. The Adelaide Mine now shows a good course of yellow ore. Nothing has yet been done to prove the value of the gold in the gossan. Some tributers working on the South Kapunda Mine are raising some good ore. Taking a review of our mines generally, they are in a very satisfactory position.

P.S.—Just as the mail is leaving, intelligence, it is said, has reached Adelaide that the lode at the Nuccaleena Mine has been again cut.

GOLD MINING IN VICTORIA—THE COLIBAN DISTRICT.—Referring to the Coliban district of the Taradale division, Mr. T. Turner, the mining registrar and surveyor, writes that the Hercynia Company, at the old ironstone hill, have moved the steam-plant from the top of the hill, and have erected it near the new shaft at the foot. The engine is to be applied to the double purpose of pumping and of puddling the auriferous earth. The main tunnel is excavated to a distance of 190 ft. It commences at the bottom of a shaft 70 ft. deep, so that under this new mode of working the water will only have to be raised 70 ft. instead of 120, as was the case before, when the Coliban Company held the mine. It was the excessive quantity of water that stopped the operations there.

There appears to be now no doubt that the Taradale field is one of the richest in the colony. Unfortunately it has too long been the desire of the Taradale miners to conceal the results for their labours, and thus capitalists have been deprived of the desire to speculate.

A new discovery has been made at Malmsbury, near Mr. Henry Orr's sheep-yards, on a tributary to the Back Creek, of an auriferous lead that dips rapidly beneath the trap-rock. Payable coarse gold has been obtained, and a party is sinking through the trap, ahead of the shallow workings. Last week the 30 tons from No. 2 claim, north of Orr's Reef, near Malmsbury, yielded 247 ozs. 15 dwts.; and 18 tons from No. 2, south of Orr's Reef, yielded 80 ozs. Thureau and party, on the Hanover Reef, will shortly crush a large quantity of very rich stone.

We hear that Mr. Charles Kinnear, the originator of the Clunes Co-operative Company, is negociating for a lease of Mr. Henry Orr's paddock, for the purpose of mining for gold upon a very extensive scale, and contemplates erecting the most powerful and improved machinery that can be procured. It is to be hoped that the arrangement will be effected, as we may then calculate that other enterprising gentlemen will embark in such speculations nearer to Taradale. There is plenty of land, and encouraging prospects.

The Malmsbury and Coliban River districts being comparatively little known to the English capitalist, the foregoing extracts from the *Taradale Express*, of Dec. 5 and 12 last, will not be uninteresting. Malmsbury and the Coliban River having only lately been brought into notice as a gold-bearing district, it may be as well to state that the township of Malmsbury forms a part of the Taradale division, Castlemaine district, and is situated 54 miles north of Melbourne, the surrounding land being, to a large extent, private property. About two years ago the Government of Victoria appointed a mining surveyor (Mr. Thomas Turner) to this division; and in his monthly reports to the Government he repeatedly alludes to the highly auriferous character of the quartz reefs, as compared with other celebrated gold fields. This induced a few enterprising miners to co-operate in testing some of the reefs, and on Feb. 20, 1863, Mr. Thomas Turner writes—"I subjoin a tabular statement of the last crushings from the following reefs:—

Name of reef.	Quartz crushed.	Total yield.
Achilles	Tons 55	81 oz. 15 dwt.
Leviathan	17	15 15
Humboldt	10	28 9
Coliban	11	32 11
Benny's	9	40 11

I have no hesitation in stating my opinion that around the township of Malmsbury there exists as rich a gold field as any that has yet been opened up in the colony." Most of these companies are progressing favourably, and many other rich reefs have been discovered, which are now rapidly attracting the attention of capitalists as well as miners, and there is every probability of this locality becoming one of the richest and most prosperous quartz mining districts in the colony of Victoria.

PANULCILLO COPPER COMPANY.—Letters have been received from the manager to January 1, on which date the company were to become owners of the mine. At that date the seven furnaces were in good order. The make of regulus in the month of December (with the seventh furnace working only 12 days) had been 9700 quintals, equal to about 450 tons of 35 per cent. regulus. The manager expected that this quantity would be exceeded in January. Instructions have been given to increase immediately the number of furnaces, so as to run a larger proportion of the ore raised into regulus.

COPPER MINES OF LAKE SUPERIOR.—It appears from the returns of Lake Superior copper mines, as far as yet obtainable, that 1863 will show an important recovery from the decline of the preceding year, even if the figures for 1861 be not equalled. There are now nearly 50 mines at work, and the copper produced from the district will, probably, equal the entire yield of Cornwall.

NOVA SCOTIA LAND AND GOLD CRUSHING AND AMALGAMATING COMPANY (LIMITED).—Holders of shares in this company will be interested in the following extract of a letter, dated Halifax, Feb. 4, and written by a colonial gentleman of respectability:—The managing director of the Nova Scotia Gold Company, Mr. Annand, has forwarded by this mail to Messrs. Robert Brookes and Co., the agents of the company in London, 91 ozs. of gold, which, with the rich specimens taken from the Blue and Cumminger leads, will make up a remittance of about $2000, and from the prospects of the company three times this amount will, probably, be remitted by the first of next month. I am happy to inform you also that the Americans are beginning to take an interest in our gold fields. Mr. M. D. Field, of New York, has been making a tour of our gold fields, on the part of himself and other capitalists; he had purchased many mining rights. At Wine Harbour and Sherbrooke he purchased claims to the extent of $40,000; at Waverly, $16,000; at Montague, $11,500; at Renfrew, $19,500. The whole of his purchases, including labour and machinery, will amount to about $400,000. Professors Chase and Silliman are making a survey of the mineral resources of the province. As soon as these reports are published it is believed there will be an exodus from the United States to our colony. The gentlemen from America who have visited the property which Mr. Field has purchased are in perfect ecstasies about the wealth of the gold fields of the colony. This opinion is borne out by the results of the last month's crushing at the company's property at Sherbrooke, the lead producing 3 ozs. to the ton. There is also a good deal of interest taken by the Americans in our coal fields, and altogether the prospects for the future prosperity of the colony never looked better.

MARIQUITA AND NEW GRANADA MINING COMPANY.

An extraordinary general meeting of proprietors was held at the London Tavern, on Monday, Mr. ROUTH in the chair.

The notice convening the meeting having been read,

The CHAIRMAN said, at the meeting held on Jan. 29 a ballot was taken upon the question as to whether the unallotted shares should be issued, when there were 43,068 votes recorded in favour of the proposition; and as there were none recorded to the contrary, the directors presumed that it was but formal to propose upon the present occasion the confirmation of the resolution then passed. At the last meeting it was arranged that a committee of six shareholders should be appointed to confer with the directors as to the most desirable form to issue these shares. That conference took place, and after several propositions were made, it was decided that the form of preference share should be adopted. The directors and the committee, therefore, with but one dissentient, came to the conclusion that it would be expedient to make them preference shares. It was proposed to issue in the first instance 20,000 shares, bearing a preferential interest of 10 per cent. from the date of issue—5s. to be paid on allotment, 5s. on June 30, 5s. on Sept. 30, and 5s. on Dec. 30; the company to have the power to redeem every 100*l*. worth of shares for 120*l*. The conference had arrived at that given point, and if the present meeting confirmed to-day the resolution passed at the last meeting, the committee and directors would again meet to further discuss the terms upon which the shares should be issued. He did hope the shareholders would come forward, as in their own interest they ought to do, and take such portions of the allotment as would be necessary to gain that end, which could not fail to act advantageously to the permanent welfare of all connected with the undertaking.

Mr. GODDARD enquired if the unallotted shares were to be issued *pro rata* among the existing shareholders?——The CHAIRMAN said they would be offered *pro rata*.

Mr. CHRISTOPHER RICHARDSON enquired if any discount would be allowed upon such shares as might be fully paid-up?——The CHAIRMAN thought it would be but fair to allow upon such shares a discount of 5 per cent.

Mr. J. D. POWLES suggested that in the words in the resolution "bearing a preferential interest" should be altered to "bearing a preferential profit."

Mr. BIRKIN enquired at what date it was proposed to pay off the preference shares?

The CHAIRMAN stated that, according to the present proposal, the company would have the power to redeem at the end of three years; that question, however, was to be re-considered.

A PROPRIETOR enquired if the preference shares were to have no other advantage than 10 per cent. preference?——The CHAIRMAN said that the preference shares would receive 10 per cent. dividend before the original shares received anything. The surplus profit that might remain after a 10 per cent. dividend had been paid upon the original shares would be divided *pari passu* among the two classes of shares. As soon as the terms were settled, notices would be sent to the shareholders.

Mr. VILLESBOISNET considered it a question if all the shares would be taken up—at any rate, as far as he was concerned, he should not be inclined to take any of them; but at the same, he should like to know if it were proposed to insert a protecting clause, to the effect that the preference shares should be paid off as soon as possible, for he considered that would be for the interest of the concern.

Mr. WHITE wished to know if the proprietors were to understand that half of the capital to be raised by these preference shares was to be employed as working capital, and the other half to pay off the debt at the bankers?——The CHAIRMAN said that they proposed to take power to issue 20,000 shares, so as to put the company entirely out of debt. Of this 20,000*l*. there were 6000*l*. owing to shareholders, and a further amount owing on this side of between 3000*l*. and 4000*l*.; so that the total liability in London amounted to 10,000*l*.; and then the directors wished to transmit sufficient money to the other side to release the silver bars, so that in future the whole of the profits might be divided among the proprietors, instead of being paid away in interest, &c. He had now to propose that the resolution passed on Friday, Jan. 29—"That the nominal capital of this company being 150,000*l*., in 150,000 shares, of 1*l*. each, of which 103,815 shares have been now issued, the directors are hereby authorised to issue the shares now remaining unappropriated in the capital of the company upon such terms and conditions for conferring a preference or priority in dividend over the said shares at present issued, and otherwise as they may think proper, and that such of the provisions of the Company's Deed of Settlement of June 11, 1852, and Supplemental Deed of Dec. 12, 1855, and other regulations of the company now in force (if any) as are inconsistent with the authority hereby above conferred, are hereby repealed, or altered so far as such inconsistency extends, and generally so as to accord with this resolution"—be confirmed.

Mr. BIRKIN thought that shareholders should insist upon knowing that these preference shares should be paid off.——The CHAIRMAN said it was proposed to give the company power to redeem them at the expiration of three years from the date of issue.

Mr. BIRKIN enquired if any difficulty had been experienced in existing debentures as they fell in? He made an application to the secretary some short time since, when he was told that he could only have one debenture of 400*l*., and that the board had no difficulty in renewing them. He suggested whether it would not be better to pay off from profits these debentures as they accrued. He feared that the issue of preference shares would adversely affect the price of the original shares in the market—indeed, immediately after the passing of the resolution at the last meeting the market value of the shares declined 2s. 6d., which to him, holding 600 shares, made a difference of nearly 80*l*. He strongly contended that some means should be devised to prevent a decline in the value of the original proprietors' shares. There could be no question that the issue of preference shares would cause a still further decline, which he could not help thinking was very unfair to the original holders. As he believed they were not far off a dividend state, surely sufficient money could be raised to pay the working expenses, and then they might gradually pay off the whole of the debentures out of profits.

Mr. J. D. POWLES said that some proprietors seemed to have a confused idea as to what was really about to be done. Now, the facts are these—it was proposed to issue 20,000 shares. And what would be the effect? Why, that the whole extent of the burden upon the company would not exceed 2000*l*. a-year. The Chairman said at the last meeting that in about two or three months the company would be netting a profit of 25,000*l* a-year, and 2000*l*. a-year was all that had to be deducted from that to place the company in that position which it most certainly ought to occupy, by relieving it from all embarrassment, and by providing a necessary working capital. Then came the question, how would this operate? Suppose there were 10,000*l*. to divide, by taking 1000*l*. from it the preference and original shares were upon a footing. It was true, the company might still struggle on, by taking 1500*l*. or 1800*l*. per month profit to pay off the very enormous percentages at Bogota; but what was the consequence? Why, the shares were a heavy drag on the market, for everybody knew that, under present circumstances, a dividend could not be paid for months to come. Whereas by raising 20,000*l*. he believed before the end of this year the half-yearly dividends would be resumed. What was the cause, he would ask, of dividends having been discontinued? Why, a three years' revolution, which no one could have foreseen or prevented? Before that revolution the property was producing 16,000*l*. or 17,000*l*. a-year profit. No possible fault could be found with the directors—they had done all they could to keep the concern going, and shareholders were to recollect that at the present time there were opened out in the mine some 128,000*l*. worth of ore. Another most important feature is, that there used to be lost in the extraction of metal about 25 or 26 per cent., but the loss had now been reduced to 5 per cent.

Mr. VILLISNOISNET said that if there were a clause inserted in the resolution, showing the time when the company would get rid of the preference shares, that very day the shares would be 5s. to 10s. premium in the market. Then would be the time to deal with the unallotted shares, by issuing them among the existing shareholders—that would make the allotted shares still more valuable, on account of that valuable option.

Mr. NEW said that he withdrew his amendment at the last meeting, because he understood that the directors would prepare and submit to the proprietors some definite scheme, but not that the matter should be left in their hands to deal with as they chose. The directors had not given any guarantee that, in the event of these 20,000 shares not being taken up they will not throw them upon the market. The question was, were the proprietors prepared to give the directors power to do as they pleased?——Mr. SPENCER HERAPATH said the proposition before the meeting was the confirmation or otherwise of the resolution passed at the last meeting; and, therefore, any discussion as to the terms upon which the capital should be raised was out of order, as a committee had been appointed by the shareholders to confer with the directors, and to decide that point.

The CHAIRMAN said it was clear the only question that could be entertained at this meeting was the confirmation or otherwise of the resolution passed at the last meeting, therefore, discussion upon any other point was not only out of order but altogether useless.——Mr. NEW contended that, as the great question was the confirmation or rejection of that resolution, he was in perfect order, and had an undoubted right to discuss the terms contained in that resolution. If the meeting did not possess that right, i was a farce in bringing them together. He did not know who appointed the committee, and he was unaware of any resolution being passed to the effect, nor did he know who were the members of that committee. When he was asked to withdraw his amendment, he understood that the shareholders who might be appointed would come prepared with some definite scheme.

The CHAIRMAN said the only object he had in view in stopping this discussion was to save time, but if Mr. New had an amendment to propose he (the Chairman) should be glad to take cognisance of it. He might mention that the gentlemen who composed the committee were—Mr. Schoales, who held 2100 shares; Mr. De Pass, 4200 shares; Mr. Villesboisnet, 440; Mr. Phillips, 3000; and Mr. J. D. Powles, who represented 12,000 shares. There could be no question that gentlemen so largely interested would do everything they possibly could for the benefit of the company.

Mr. BIRKIN should not have objected to the proposition had it been more determinate.

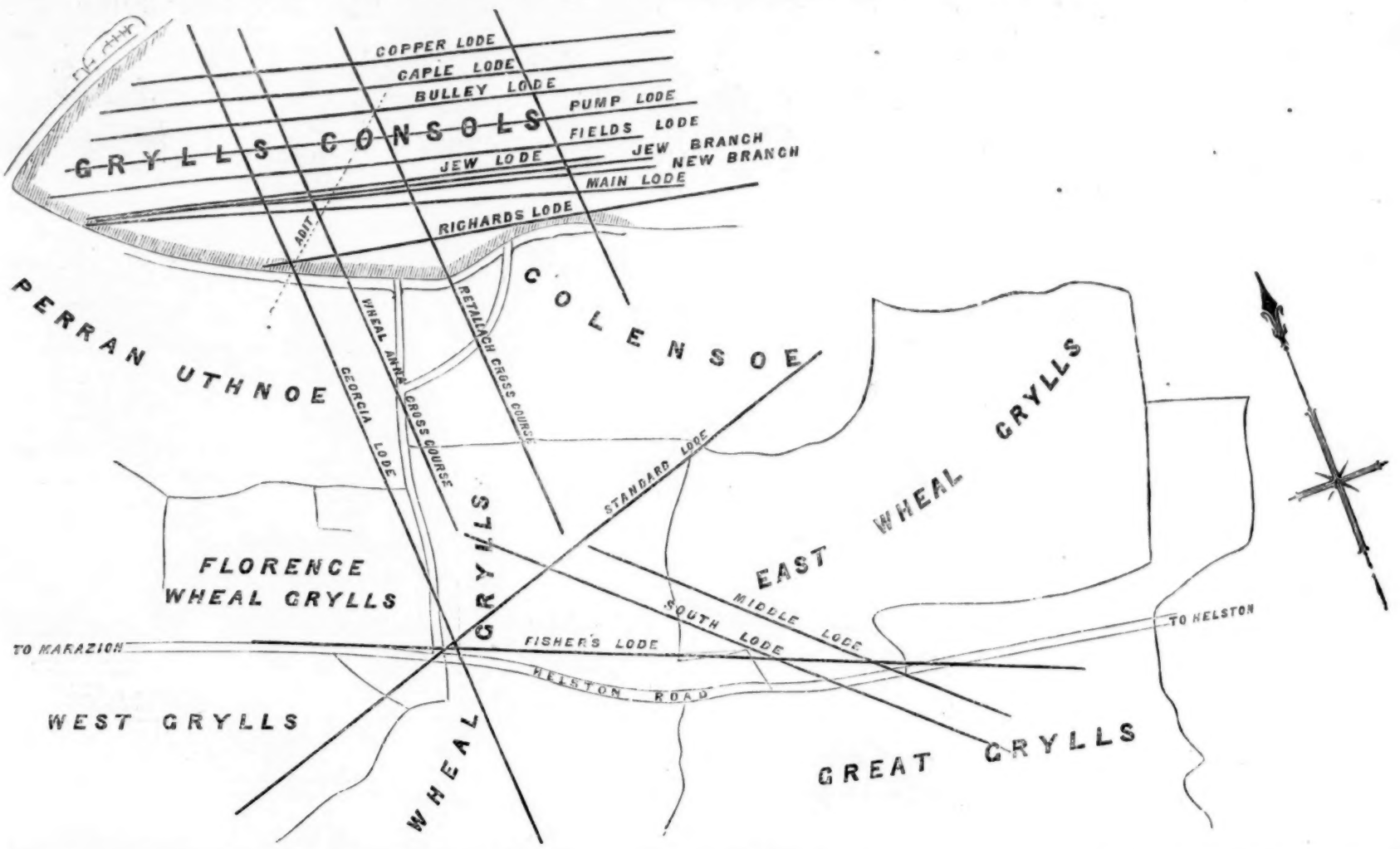
Mr. POWLES said that the resolution must give the directors power, and the directors had given a pledge that they would act only in conjunction with the committee of shareholders. At the conference there were 30,000 shares represented.

Upon the ballot being taken, the resolution was confirmed.

Mr. A. De Pass was elected a director. The proceedings then terminated.

WAR, AND THE METAL TRADES.—A remarkable instance of the truthfulness of the opinion that during the period of war the metal trades flourish more than at other times is afforded by the result of the present contest in America. The iron interest particularly has been unusually active, and more money has been expended in extensions and improvements by those engaged in the business than within any similar period for the last ten years. Among those who have exhibited a commendable enterprise in this respect are Messrs. John Gray and Co., of the Pittsburg Rolling Mills and Tin Works, whose premises occupy a very eligible location on the back of the Monongahela River, and may be reached either by the Connellsville Railroad, the Braddock's Field plank road, which runs close by, or the river itself. The grounds on which they stand cover an area of some three acres, and they occupy a position of some 8 or 10 ft. above high-water mark. This renders it impossible that the river can ever reach the works, an advantage the value of which those establishments are flooded on the occasion of almost every heavy freshet will fully appreciate. The firm paid at the rate of $750 per acre for the ground originally, but such is the demand for sites for manufacturing purposes now, that though nine years have scarcely elapsed since it was purchased, it would sell readily to-day for $3000 per acre. The firm has been for some time engaged in the manufacture of wrought sheet iron, hollow ware, and tinned goods. To lessen the cost of the raw material, as well as to enlarge their business, they were induced to erect this new mill. They have now invested in grounds, mill, and machinery a total of some $70,000, and with their present facilities are prepared to do a large business and fill orders promply. The senior member of the firm, Mr. J. Gray, is superintendent at the copper works of Messrs. C. G. Hussey and Co. The rolling-mill and tin works are under the superintendence of Mr. John D. Gray, while the sales department is conducted by their agent, Jos. M. Lippincott, furnaces of large dimensions, and one annealing furnace. Two pair of sheet-iron rolls have already been put up, and the arrangements for putting in a pair of muck rolls are nearly completed, and will shortly be in operation.

THE GRYLLS MINING DISTRICT.



The Grylls, or Marazion, district bids fair to rival in public avour the now justly celebrated Chiverton district—that is, if we may judge by the rapidity with which all the mining ground in the locality is being taken up. The district has been, perhaps, one of the richest in the world, the mines around having yielded tin and copper ores of the value of some millions sterling, and, considering the quantity of ground still unwrought, there is every probability that this amount will be very greatly increased. The following are some of the mines from which large returns have been made :—

Mines.	Returns.
Trevarthian Downs	£280,000
Wheal Prosper	259,000
Wheal Fortune	570,000
Gwallon	61,000
Wheal Darlington	161,000
Wheal Friendship	261,000
Wheal Rodney	231,000
Tregurtha Downs	165,000
Wheal Jewell	108,000
Guskus	23,000
Hallamanning	283,000
Wheal Trevelyan	26,000
Owen Vean	250,000

Mines.	Returns.
Wheal Caroline	£ 84,000
Wheal Grylls	47,000
Wellington (now part of Wheal Grylls)	32,000
Millpool	18,000
St. Aubyn and Grylls	65,000
Wheal Charlotte	157,000
Trenow Consols	48,000
Wheal Trebarvah	32,000
Wheal Speed	15,000
Wheal Speedwell	167,000
Tolvadden	48,000

One of the most successful of the mines, and the one which has recently called particular attention to the district, is Wheal Grylls. This mine, within the short period of three years, has returned profits amounting to upwards of 12,000*l.*, on an outlay of only 2250*l.*, and there is every prospect of a continuance for many years to come, and the shares are now selling at the rate of about 27,000*l.* for the mine, or 12 times the amount of capital subscribed. East Grylls, also, with 2048*l.* paid, is selling for 26,000*l.* Great Grylls, with 3072*l.* paid, is selling for 15,000*l.*; and Florence Wheal Grylls, only just started, with 4000*l.* paid, is selling at from 12,000*l.* to 14,000*l.* Another instance of success is Prosper United, the shares in which only a few weeks ago were at merely a nominal price, and are now readily saleable at the rate of about 40,000*l.* for the mine.

The above plan shows the position of the different mines in the immediate vicinity of Wheal Grylls, among the most important of which is Grylls Consols, hitherto worked by a few local gentlemen, under the name of Wheal Hawkins. This mine is held under lease from Mr. C. H. T. Hawkins, at 1-20th royalty, for a term of 21 years, and has every prospect of becoming equal in value to any in the district. There are no less than six lodes opened upon, all producing tin; and the Georgia lode, from which a large portion of the returns in Wheal Grylls has been made, passes directly through the property. This lode, like most cross lodes, has always been found richest at the point of intersecting other lodes; and, as in Grylls Consols, it intersects no less than six east and west lodes, all themselves productive, it is only reasonable to expect unusually large deposits of ore. Although in Grylls Consols the different ends have been driven but a short distance, upwards of 12 tons of tin have been raised, and there are reserves estimated at about 3000*l.*, which will do to take away at a moderate tribute.

The mine is in full working order, and by continuing the present points of operation a very large quantity of tin ground will in a short time be opened up; and it must be borne in mind that a lode in this district, worth (say) from 5*l.* to 10*l.* per fathom, is really a valuable lode, in consequence of the very easy nature of the ground, the price for driving being only from 40s. to 50s. per fathom. Grylls Consols is a very large sett, being nearly a mile on the course of the lodes; and, in addition to the tin lodes above mentioned, there is a fine copper lode (which can be intersected by continuing the deep adit level), from which in an adjoining mine upwards of 40,000*l.* worth of ore has been raised. Under these circumstances, it is but fair to assume that, with a little money and patience, Grylls Consols will prove to be a first-class mine, and that parties who may now invest will reap a large reward for their outlay.

THE GRYLLS CONSOLS TIN MINE.

Situate in the parish of St. Hilary, in the county of Cornwall.
Divided into 2048 shares.
Conducted on the Cost-book Principle.

This valuable property is situate in the heart of one of the richest mining districts in the county of Cornwall, and is surrounded by Wheal Grylls, East Grylls, and other well-known mines.

As an instance of the success attending mining operations in the district may be mentioned Wheal Grylls, which, on an outlay of only £2250, has within a very short period returned over £12,000 profit, and the shares, with £2 4s. paid, are at the present time saleable at £37 10s. The shares also in East Wheal Grylls, with only £1 paid, are quoted at 13*l.* to 14*l.*

A considerable sum has been expended in opening the Grylls Consols Mine, with what success will be gathered from the annexed reports. It may, however, be stated that during the last three years the mine has been worked at a profit, the reserves are estimated at from £2500 to £3000, and there is about £500 worth of tinstuff on the floors.

There are seven or eight lodes in the sett, which is very extensive; six are already opened upon, and have all produced tin to value; the celebrated Georgia lode also passes through the property. The lodes are well defined, and are embedded in a beautiful mineral-producing clay-slate, very easy for working.

On the dressing-floors a good burning-house has been erected, also a water-wheel, nine heads of stamps, and other necessary apparatus for dressing tin, and, altogether, the mine has been laid out and opened in a thoroughly efficient manner.

To work the mine in depth a steam-engine will be necessary; however, the amount required for this will be but small, and, in the meantime, by continuing the present working at the 20 and 33 fm. levels important discoveries will, no doubt, be made, and a large quantity of tin ground opened.

The concern is one of the most legitimate ever offered to the public, and can with confidence be recommended. The mine is in full working order. The lodes are proved, and have been found to produce tin in paying quantities, and although, as will be seen from the reports, the different ends have been driven but a short distance, there are reserves from which upwards of £200 worth of tin per month can be returned for the next twelve months, without further discoveries being made. There is also the sum of £1000 in hand towards working capital.

The mine is divided into 2048 shares, of which 500 are for disposal, at the price of £5 per share. Applications to be made to Mr. THOMAS FULLER, jun., 2, Winchester-buildings, Great Winchester-street, London, E.C., of whom prospectuses and every information may be obtained.

REPORT OF CAPTAIN EDWARD ROGERS, OF WHEAL GRYLLS, EAST GRYLLS, ETC.

Wheal Grylls, Jan. 26, 1864.—At your request, I hand you the following report of Grylls Consols Mine. This mine is situated in the parish of St. Hilary, in the county of Cornwall. I find the sett to be very extensive, and surrounded by the best mines of the district, which are producing large quantities of tin. I find there are several well-defined lodes in this property, embedded in a beautiful mineral-producing killas (or clay-slate), which is easy for progress. The present company have laid open and worked to some extent six of these lodes, to a depth of about 33 fms. from surface, by way of shafts and a cross-cut adit level, which has and will suffice to explore the whole sett. There are four shafts, three of which are communicated with the deep adit. In driving this adit west they have intersected a very large cross-course, about 2½ ft. wide; this lode has the appearance of the Georgia lode, in Wheal Grylls, and is producing stones of tin of the same character, and its bearing is the same; I should, therefore, judge it to be the same lode. No. 1, or main lode, driving west in the adit end, is worth 4*l.* per fathom. This end has been driven through about 30 fms. of good tin ground, which is in whole ground from this level to surface, and the backs will leave a good profit in stoping at (say) 10s. in 1*l.* when this level is communicated with No. 4 shaft. At the 20, driving west from Pearce's shaft, the lode is 2 ft. wide, producing rich work for tin, with every indication for an improvement.—Wheal Jew Lode: At the adit level, driving west, the lode is 1 foot wide, rather disordered by the cross-course, but producing good stones of tin. Pump lode, driving west, is about 16 inches wide, yielding saving work for tin At this end, driving north, the end has gone through 3 fms. of disordered ground, but the lode is again making its appearance, and yielding very rich work for tin at this point. Looking at the nature of the lode, and the character of ground about the lode, I should say it indicates a very rich deposit of tin when further developed.—Capel Lode: In the end driving west at the adit level the lode will pay for driving; the lode in the back of this level is large and rich for tin; the stopes will leave a good profit. The stopes throughout the mine are looking well. There are other lodes standing in whole ground to the north, and a few fathoms further driving will intersect them. There is a new water-wheel erected, and nine heads of stamps, which will enable you to return about 800 bushels of tinstuff monthly. I would remark, looking at the many productive lodes now laid open, and the large quantities of tin ground to take away, together with the quantities of tin now on the floors, and taking into consideration the geological position of the property, surrounded as it is on all sides by good mines, I must say that I consider Grylls Consols will, ere long, make a good and lasting mine, if developed in a mining-like manner.

EDWARD ROGERS.

REPORT OF CAPT. JOHN NANCARROW, OF ST. IVES CONSOLS, &C.

Grylls Consols, Jan. 28.—This mine is situated in the parish of St. Hilary, in the county of Cornwall, being three miles east of the town and port of Marazion, and five miles from Hayle. The sett is a mile in length from east to west, and half a mile wide; it is close to Wheal Grylls, East Grylls, and Wheal Florence on the north, is traversed by the same cross lodes, and contains several east and west lodes. The situation is good, and the district is known to be exceedingly rich in produce, both for tin and copper. The stratum is killas; the levels are reckoned from surface. The water is drained by an adit 33 fms. deep, which is the lowest point of working. The lodes first noticed run east and west. Richard's lode is 25 fms. from south boundary, and is worked 13 fms. deep and 40 fms. long; it is said to have been rich, but the workings are now full. No. 1, or main lode, 45 fms. further north, is worked in the 20 and 33 fm. levels; it is about 2 ft. wide, and underlies south 1¼ to 2 ft. in a fathom. The 20 is only driven 7 fms. from Pearce's shaft westward, where there is a fine strong gossan lode, containing tin that will pay for driving, or worth £3 per fm. In the 33 fm. level 25 fms. are driven, lode comprised of gossan, peach, quartz, &c., worth £4 to £5 per fm.; there is very little ground stoped, but the lode has a very good appearance, and is likely to pay well on being opened. Wheal Jew lode is opened on in the 20, 28, and 33 fathom levels; it is 37 fms. north of the main lode. There are 25 fms. driven west from Michell's shaft in the 20, lode 1¼ to 2 ft. wide, worth in some places in driving £18 per fm., but on an average £6 per fm.; this includes both lode and branch, which will come together in going down. The 28 is driven 5 fms. east, lode 1½ to 2 ft. wide, worth £10 per fathom. The 33 is driven 6 fms. east of Michell's shaft, and 9 fms. west, lode 2¼ ft. wide, worth £6 per fm. In the 20 fm. level, 85 fms. north of Wheal Jew lode, there has been a large lode recently discovered, which yields good tinstuff, and very rich stones of tin. This is an important discovery, and likely to prove very valuable. The capel lode, still further north, is worked near the middle of the sett for 10 fms. in length, and is worth £3 per fm., at a depth of 20 fms. from surface. This lode has been very productive of tin, and also another, yet further north, of which nothing can now be seen. The north lode is a copper lode, not worked in this sett, but in an adjoining mine to the east gave a profit of £17,000. The Georgia lode runs north and south, and is opened on for 130 fms. in the 20 fm. level; it is a strong lode, and has, in some places especially, a very fine appearance. There was a rich branch of tin 35 fms. north of Michell's shaft, and there are a great number of branches further north; this lode is only just driven through in the 33, where it is a large strong lode, and likely to be productive; this lode has given the greater part of the profit in Wheal Grylls, and there is every reason to expect it will be equally productive here. There is another cross lode of promising appearance seen some 40 fms. further east. Upwards of 12 tons of tin have been already raised. There is a good water-stamps of nine heads, with burning-house, and other necessary apparatus for dressing tin. The sales for the last two months were between £300 and £400, which left a profit, and considering the small quantity of ground taken away (for there is but very little stoped) it is really surprising where the tin has come from, and though so near the surface I think the tin ground laid open is worth £2500. Looking, then, at the position of the mine, as being surrounded by many other productive mines, the nature of the ground, its being easily and cheaply worked, the good appearance of the lodes, their productive character so far as developed, and their many intersections by cross lodes, &c., there is every probability that a very valuable mine could soon be opened up here, and that with a very moderate outlay.

JNO. NANCARROW.

REPORT OF CAPT. W. H. RICHARDS.

Marazion, Jan. 27, 1864.—Permit me to hand you the following as my report of Grylls Consols Mine, situate in the parish of St. Hilary, in the county of Cornwall. The sett is very extensive, being about a mile on the course of the lode, and half-a-mile in width. The geological position of the property is all that can be desired, being in close proximity to the Wheal Grylls, East Grylls, and other mines that command a great market value; in fact, the property is immediately surrounded by mines that have afforded returns of nearly £4,000,000 sterling, a sufficient guarantee of the richness of the district in which this mine is situated. The mine has been in operation for some time, by way of driving a deep cross-cut adit, and sinking shafts on the different lodes, six of which have been laid open, and all are producing good work for tin. No. 1, or main lode, is intersected in the deep adit, and yielding good work for tin. This lode is about 2 ft. wide, underlying south, composed of tin, quartz, and capel. There has been a large quantity of tin raised from this point; the lode is now worth full £4 per fm. This lode continues to be very rich in the bottom of the level for many fathoms in length, but to develope it deeper will require the aid of machinery. In the 20, driving west from Pearce's shaft, the lode is about 20 in. wide, producing good work for tin. At the present point of operations it is about the same value as the last-mentioned point.—Wheal Jew Lode: In the adit end, driving west, the lode is about 1 ft. wide, rather disordered by the cross-course, but producing good stones of tin. Pump lode, in the adit end driving west, is about 16 in. wide, yielding good stamping work, and has every indication of an improvement. In this level the cross-cut is driving north, and has gone through about 3 fms. of disordered ground. Just at this point they have intersected a very large lode, some portion of which is very rich for tin. When this lode is further opened on we shall be able to say more as to its value, but, as it stands, it is a very fine lode; indeed, in my opinion this part of the mine will be found very rich in the next level. There are yet two lodes further north, and parallel with the lodes in Halamanning, one of which is a copper lode. From these lodes the old men made large returns on the backs. The copper lode was worked further east to some depth, and about £40,000 worth of ore sold. These lodes can all be intersected by the deep adit. The lodes seen in this mine are regular, well-defined, and embedded in a beautiful mineral-producing killas or clay-slate, easy for progress. It must be borne in mind that these lodes are also crossed by large and powerful caunter lodes; and, about the centre of the points now in operation, the Georgia lode, that has produced so much tin in Wheal Grylls, intersects the whole of them. This lode has a champion-like appearance, also producing good stones of rich quality tin. I have no doubt this lode will be found very rich at a deeper point, as was the case in Wheal Grylls. I find the present company have broken, sampled, and sent to stamps, from the lodes I name, 12 tons of first quality tin; £300 worth of this has been cleaned and sent to market; this has been the work of about three months. I consider there is from £2500 to £3000 worth of tin discovered, and will all do to take away in a moderate tribute—say, from 8s. to 10s. in £1. To work this mine systematically, and in a mining-like manner, there must be a shaft sunk in the south part of the sett, so as to fully develope all the south underlying lodes; and there should be a good engine-shaft sunk at, or near, the present point of operations in the north part of the sett. Both these shafts could be worked by the same engine. The cross-cut should also be pushed on with all possible speed in the 33, to intersect the before-mentioned lodes standing in whole ground to the north, and which have been found so productive a little to the east. There is also another lode, standing to the south, that should be cleared up and put in operation. I would remark that, looking at the geological position of the property, together with the number of lodes laid open embedded in a well-defined stratum, a portion of the great mineral-producing range of one of the richest districts in the county of Cornwall, I am fully convinced that this is a first-class property, and doubtless will, when worked with spirit, prove equal to any mine in the Grylls or Marazion districts. The property is surrounded with good roads, being only about three miles from the shipping ports of St. Michael's Mount and Hayle, thereby affording cheap and easy transit for carriage of ores and materials. In addition to these advantages, there is a first-class water-wheel and nine heads of stamps erected, all new, and a new burning-house, which will enable you to return good quantities of tinstuff at a very moderate expense.

W. H. RICHARDS.

CORNISH PUMPING ENGINES.—The number of pumping engines reported for Dec. is 31. They have consumed 2303 tons of coal, and lifted 17·7 million tons of water 10 fms. high. The average duty of the whole is, therefore, 51,800,000 lbs. lifted 1 ft. high, by the consumption of 112 lbs. of coal. The following engines have exceeded the average duty:—

Carn Brea—76 in.	Millions	57·4
Cook's Kitchen—50 in.		53·1
Crane—70 in.		71·3
Dolcoath—Harriett's 60 in.		53·2
Great Wheal Busy—Harvey's 85 in.		59·3
Great Work—Leeds' 60 in.		65·5
North Roskear—Doctor's 70 in.		60·4
North Wheal Crofty—Trevenson's 80 in.		60·1
South Wheal Frances—Marriott's 75 in.		68·2
West Caradon—Elliot's 50 in.		67·6
West Wheal Seton—Harvey's 85 in.		62·0
Wheal Ludcott—Willcocks' 50 in.		66·2
Wheal Margery—Welsley's 45 in.		58·0
Wheal Seton—Tilly's 70 in.		53·8
Wheal Tremayne—Michell's 60 in.		62·6

OBTAINING MOTIVE POWER.—The invention of Dr. W. W. Sleigh, of London, consists in rendering nugatory one of two antagonistic forces. He supports an axle or shaft in a frame, and to this shaft or axle is fixed one or more arms, and at the extremity of each arm is fixed a small chamber, with a loose lid. This lid is kept from separating from the chamber, and yet made to travel with the chamber *vis-à-vis*, or parallel to its bottom, by a system of levers, acting on a ring fixed to the frame, and also with a ring loose on the axle, in connection with toothed wheels and levers. Into this chamber he pumps a liquid, which necessarily acts in every direction on the internal surface of the chamber. The force acting against the lid cannot counteract the force acting on the bottom of the chamber, forasmuch as the said lid has no tie whatever to the chamber, being supported and retained in its position by the mechanism alluded to. The force acting against the bottom of the chamber which is fixed to the arm, having no antagonistic force, is to produce a rotatory motion.

THAMES TUNNEL COMPANY.—Receipts for the week ending February 13, 92*l.* 8s. 2*l.*; number of passengers, 22,178.

FOREIGN MINES.

ST. JOHN DEL REY.—The directors have received, by telegram from Lisbon, the following, dated Morro Velho, Jan. 17:—Produce for Dec., 39,696 oits.; cost 10,410*l.*; profit for ditto, 4904*l.* Produce, 11 days of Jan., 13,789 oits.; yield, [illegible] Doing full duty.

[illegible] Mine, Dec. 31: Estimated produce for December:—

COPIAPO.—Checo [illegible] city.

Class.	Quantity.	Produce.	Ley.	Amount.
First class dark ores .. Qtls.	32	.....	..... 2·60	..... $416
Second class ditto	128	 20		
Third class ditto	320	 12		
Fourth class ditto	768	 10	..... 0·75	 912
Second class green ditto	128	 15		
Total	1376			$1328

In the 60, east of Price's shaft, the lode in the end driving east is 2 ft. wide, composed of black spar, which is a good indication for metal. In the 65 chiffon, sinking east, the lode is a little improved since our last report, the lode being now 2 ft. wide, 1 ft. of which yields ore of 25 per cent., producing 3 tons per fathom. In the 65 chiffon, sinking west, the lode is 1½ ft. wide, looking very promising. In the 50, east of Price's shaft, the lode in this end, driving west, is still poor. In the 50, No. 2 chiffon, sinking west, the lode still presents the same appearance as when last reported. In the 40, west of Price's shaft, the lode in the chiffon, sinking west, is 4 ft. wide, composed of spar, mundic, and a little ore, but not to value; by the present appearance we think that we shall meet with a bunch before our next report. In the 40 winze the lode is still poor, but very kindly. In the 80, at Harman's shaft, the ground in the cross-cut is still hard. In the 60, at Price's shaft, we have commenced to cut a plat, in order to sink the shaft below this level. In the eastern new ground the lode in the chiffon is still the same. —Western Sett: In the 10, chiffon sinking west, the lode is still poor. In the 30, new shaft, we have commenced to sink the shaft under the 30, by six men; the lode is 4 ft. wide, all full of fine grey ore, presenting a good prospect. In the western new ground the lode in this chiffon is poor; here we have met with a little water. In the western sett, No. 2 chiffon, the lode is still poor, but looking very promising.—Remarks: The ends at the 30, new shaft, we cannot drive as yet, owing to the place being so close; so soon as we do communicate the 10 fm. chiffon with this level then we can go on with full speed. At present the mine is very poor, but looking up a little.—G. MATTHEWS.

NEW WILDBERG MINES.—Z. Walls, Feb. 13: The 20, driving east on the Erbteiftergang lode, continues to improve, and is worth at present full 4 tons of silver-lead ore per lachter. The 20, driving west on the Dornergang lode, is at present unproductive; but still, from the appearance of the lode and the stratum surrounding the same, I think we shall soon again get ore. The sinking of Carter's shaft is being pushed on by nine men with all possible dispatch, so as to enable us to intersect those lodes in the 30 as quickly as possible. The cross-cut driving from the bottom of Beck's No. 2 sink, to intersect Beck's north lode, has got into very hard ground, which greatly retards our progress. Yesterday we sold our returns for January, computed 2700 centners, or, say 135 tons, of silver-lead ores, to Mr. Penners, of Cologne, and Mr. Soeteman, of Niederfischbach, at 3 th. 3 sgr. 6 ph. per centner, which will leave us a little over 300*l.* profit on the month's work. It will be seen from the setting list for the present month that we have 314 hands employed, and our estimated returns is 147 tons of silver-lead ores.

PONTGIBAUD.—W. H. Rickard, Feb. 15: Roure: The 80 metre level, south of Richards's shaft, on the eastern part of the lode, yields a little saving work. The rise in the back of this level, on the main part of the lode, yields 1½ ton of ore per fm. The 80 north is unproductive. The 60, south of the same shaft, yields 1¼ ton per fm. The 60, north of cross-cut, on Emily's lode, yields a little saving work of low quality. The 40 m. level, south of Agnes', opens tribute ground. The 20, south of the same shaft, yields 1 ton of ore per fathom. The adit south is in disordered ground. The stollen, south of James's shaft, is without any change to notice—unproductive. The stopes and tribute pitches throughout this mine yield as when last reported.—La Grange: Noshy's shaftmen are engaged dividing and casing the shaft from the 20 to the 40 metre level; we shall begin to cut the plat at the 40 in a day or two. The 20 metre level north yields stones of ore, but not enough to save. The adit north of cross-cut is poor. The cross-cut west at La Rancoule is without change. Our stopes are not quite so good as when last reported.—Miloche: The 100 cross-cut, west of Taylor's shaft, has met with a vein of quartz, which appears to be a part of No. 7 lode; it lets out much water. The 100 north, on No. 3 lode, produces stones of barytes, with spots of ore. The end of the 80 metre level north, on No. 2 lode, is nearly all barytes, with a little quartz intermixed, without any ore to value. The adit cross-cut, west of the railway level, is in hard sparry ground. We have discovered the back of a large lode in the opposite hill, which is no doubt the same as the one we shall intersect by this cross-cut; it contains a little phosphate and carbonate of lead, mixed with barytes, for a width of 3 inches; a pit is being sunk on its back.—La Brousse: The shaft set to sink on the back of the lode that I mentioned in my last report is now down about 5 metres, showing the lode to be very regular, having the same run as our lodes generally, and underlying slightly; it is composed chiefly of red earthy matter and barytes, with a good rib of ore, worth 1 ton per fathom. There is nothing new in the cross-cut at La Mothe.—Pranal: We have begun to sink in the bottom of the 70 metre level, on Amantine lode, near its junction with the Felix lode, where we have no doubt of opening some good tribute ground.—Susan's Lode: We have holed through the rise in the back of the 70 metre level, and shall resume the driving in a few days. The 50 north is in disordered ground, the lode being disordered with a succession of cross-branches, which contain ore enough to work on tribute. The 30 south yields stones of ore. The 8 metre level north yields a little saving work, but is spare for driving. The same level north, on the eastern part of the lode, yields ½ ton of good ore per fathom. The 8, south of No. 2 cross-cut, on No. 2 lode, is composed almost entirely of mundic, without any lead ore. The rise in the back of the 50 north yields ¼ ton of ore per fathom. [illegible] operations have been greatly hindered by very severe [illegible] change, af-

Our surface operations have been greatly hindered by very severe weather; we are glad to say that there is a favourable change, after six weeks of nearly unremitting frost.

WEST CANADA.—Capt. Plummer, Jan. 16: Copper Bay Mine: We are pushing on the engine-shaft with all possible dispatch, and at Bray's shaft we are making fair progress. The new engine-shaft, however, is slow, having recently met with a large influx of water, which will be a source of trouble to us. The stopes throughout are yielding an average supply of ore, and are promising to continue for some time at the same rate. Grenfell's shaft, Wellington, has been holed to a cross-cut that we were driving for [illegible] Knight's winze, an object at which we have been aiming for some time past. We have hereby opened a stope on the Fire lode, nearly 15 fathoms deep, and also for the same depth on the new lode. Before the latter is available we have to sink for a fork, which will occupy another month. The 30, east and west of Crase's, are both slow for cutting; the lode, however, maintains its size and character, yielding about 2 tons to the fathom. The winze below the 20, east of cross-cut, is yielding 2¼ tons to the fathom, and the lode is composed of promising ingredients. On the surface we have heavy falls of snow to contend against: the winter, so far, has been very rough, which makes much against our surface operations. We have succeeded in completing the new mill-house, and the carpenter employed making new jigging-hutches, &c., for the new dressing-floors, so that when summer comes we shall have nothing to do but to lay them down. Our operations as to dressing are favourable, considering the season. We are now repairing the crusher, cleaning boilers, &c. When this is done everything will again be in thorough repair to go on for a long time.

CENTRAL AMERICAN.—Dec. 31: San Pantaleon Mine: We have resumed sinking Cornubia engine-shaft, by three Englishmen and three natives, below the San Alfonso, or 40 fm. level, taken at 26*l.* per fathom, for 5 fms.; the lode in the bottom of this shaft is 1 ft. wide, composed of flookan, and calc-spar, with a little silver ore, but nothing to value.—Taylor's Engine-shaft: This shaft has been sunk 2½ varas, at $40 per vara; the ground is without alteration to notice; we have about 5 varas more to sink to get down on to Alfonso deep adit, when we shall commence to drive towards the deep adit now driving east. In Williams's shaft six men have sunk 3¾ varas, at $22 per vara. San Alfonso, or 40 fathom level, under Dolores: Six men have driven this end, east of Cornubia engine-shaft, 10 varas, at $7½ per vara; the lode in this end is 8 inches wide, worth 2 cwts. of good quality silver ore per fathom, and improving in appearance. San Alfonso, or 40 fm. level, west of Cornubia engine-shaft, has been extended west 11¼ varas, at $7 per vara; the lode in this end is split into branches, composed of flookan and hard porphyry, with spots of silver ore, worth 1 cwt. per fathom.—San Felipe, or 30 fm. level, below Dolores Adit: This end, driving east of No. 2 cross-course, has been extended east 12½ varas, at $7 per vara; the lode in this end is 14 inches wide, composed of calc-spar and flookan, impregnated with silver ore, but nothing to value. San Ricardo level has been driven east of No. 2 cross-course, by six men, 5¼ varas; here the lode is 4 inches wide, composed of flookan and a small branch of silver ore; at this point we hope shortly to hole No. 3 winze, when we shall be able to open another stope above this level.—San Alfonso, or Deep Adit Level: This level has been driven east towards Taylor's engine-shaft 10¼ varas, at $16 per vara, by six men; the ground is much improved for driving, and more water is coming out of it. In No. 3 winze, below San Ricardo level, east of No. 2 cross-course, the lode is 10 inches wide, composed of flookan, calc-spar, and mundic, with a small branch of low quality silver ore, producing 2 cwts. per fathom. The lode in the stope No. 1, east of No. 2 cross-course, and in the back of San Felipe level, is 1¼ ft. wide, worth 5 cwts. of rich quality silver ore per fathom. The lode in No. 2 stope, above the same level, and east of No. 2 winze, is 1 ft. wide, worth 3½ cwts. of rich quality silver ore per fathom. No. 4 stope, below San Juan level, has been wrought through; this stope has given about 2 tons of rich silver ore in December month. We have put the men to stope a No. 6 stope, below San Juan level, east of No. 5 stope; at this point the lode is 2 ft. wide, composed of a very coarse spar, impregnated with silver ore, worth 6 or 7 cwts. of low quality silver ore per fathom. The lode in the stope No. 5, east of No. 2 cross-course, below San Juan level, is 1 ft. wide, worth 4 cwts. of good quality silver ore per fathom. Our returns have been lessened, in consequence of a run in San Juan level, which cost an entire week. I am pleased to inform you that the quality is not diminishing, if the quantity is; also that the machinery is still working in its usual good order. The returns from San Pantaleon amount to 107 tons 12 cwts. in the month.—San Antonio Mine—Ellery's Shaft: This shaft has been sunk below San Ramon adit 5 varas, 2 varas at $20, and 3 varas at $18, by six men; the lode is 18 inches wide, composed of gossan, calc-spar, and flookan, with a little silver ore and mundic, but nothing to value. The lode in the stopes below San Ramon adit, east of Ellery's shaft, is 8 in. wide, worth 3 cwts. of rich silver ore per fm. The lode in the stopes above San Ramon adit level is 18 in. wide, worth 2 cwts. per fm., but has now become very poor. The cross-cut driving south-east side of the cross-course has been advanced a further distance of 11 varas, at $7 per vara—the ground is still free for driving, with several small branches in the country rock, showing an indication of being near the lode. Mistin's winze has been sunk below San Luis level, east of Ellery's shaft, 3 varas, by four men, at $5 per vara; the lode in this winze has a little improved, being 10 inches wide, composed of flookan, with a branch of low quality silver ore, worth 1 cwt. per fm. This winze is to prove this piece of ground, and also to ventilate San Ramon level. In the stope west of Ellery's shaft the lode is worth 6 cwts. per fm. of good silver-lead ore, but this is taking a small arch away.—San Vicente Mine: The adit level has been driven east about 1 vara since last report, and intersected a cross-course which hove the lode. We suspended this for the time being, and went back about 8 fms. in this level, where the lode split and drove east on a large flookan. At this point we have driven about 8 varas; the lode is 15 in. wide, composed of blue flookan, calc-spar, and mundic, with spots of ore, but nothing to value. We have begun to sink a winze below the adit level, where we took out some good stones of rich silver ore worth 1 cwt per fm.

Jan. 2.—The ore raised from the mines amounted to 107 tons 12 cwts. from San Pantaleon, and 17 tons 4 cwts. from San Antonio, being a total of 124 tons 16 cwts.: 130 tons of ore were reduced at the hacienda. There are 21 bars of silver on hand, and nine more will be ready by Jan. 8, when the 30 bars will be sent to the Mint. The value of these bars is about 5000*l.*, which, after providing for the wants of the mines, and all liabilities, will leave about 2000*l.* as the necessary reserve fund in Guatemala.

CORD MADOG SLATE QUARRY.—This celebrated old quarry is once again in working order, and the quantity of visible rock warrants the high character at which it has been estimated. The machinery has been fitted up in a very superior manner, and will be put in full operation in a few weeks, or as soon as the table stage is completed for landing the blocks and rubbish. The slates now being made will amply repay the shareholders by visiting the quarry to see them.

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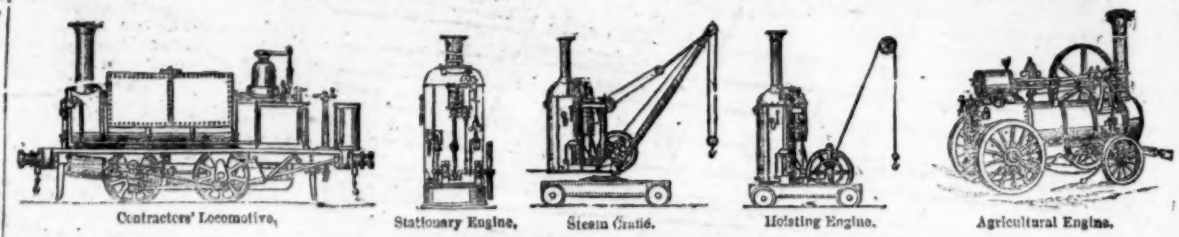

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9 " "	5½	"	×	11 "	350	21 " "	8½	"	×	14 "	600
12 " "	6½	"	×	13 "	450	27 " "	9½	"	×	16 "	720

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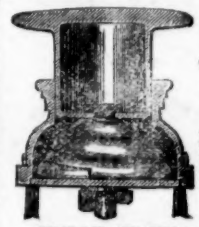

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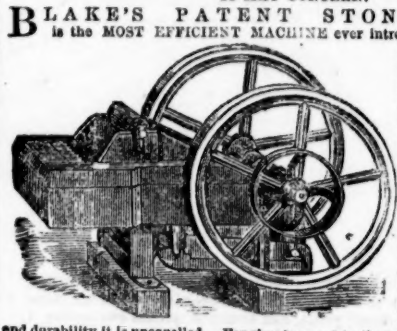

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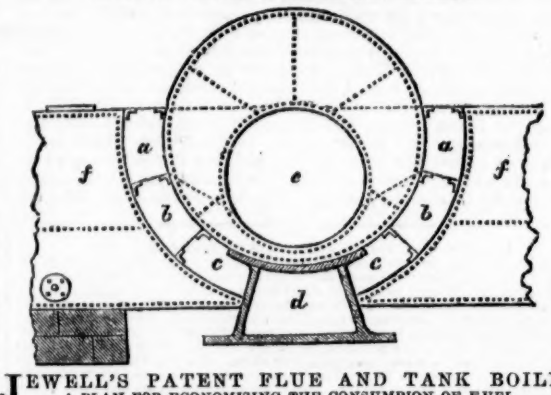
PATENT FLUE AND TANK BOILER.



JEWELL'S PATENT FLUE AND TANK BOILER

A PLAN FOR ECONOMISING THE CONSUMPION OF FUEL IN STEAM BOILERS.

The advantages of this boiler, an illustrated description of which was published in the MINING JOURNAL of October 3, are obvious.

It is provided with WROUGHT IRON FLUES, conveying the fire entirely over the surface of boiler below the water line, and wholly doing away with lime coming in contact with any part of the boiler, lime having been found to destroy the boiler plates before any other parts are the worse for wear. This boiler has four additional flues to the plan at present adopted, thus affording a FAR GREATER AMOUNT of HEATING SURFACE, and MORE EFFECTUALLY CONSUMING the GASES. Between the boilers a wrought-iron tank is fixed, extending the whole length of the boilers, for containing water for feed; this water will pass into the boiler at any temperature required. This boiler will not require anyone to enter the flues for cleansing, as the flues are provided with shifting stoppers at the ends, enabling a person to cleanse the flues even while the boiler is hot; this plan answers for any size or length boiler, and will do away with the cold water feed, which has been the cause of so many accidents. These flues are made of wrought or cast-iron. On the top of the tank a pipe will be placed, to take the waste steam that escapes and carry it to the cistern. The flues for a 6 ft. boiler will be 2 ft. long, and the usual width. It must be remembered that the tank once hot will remain a hot body, with the same amount of heat that passed off before in the brick flues. I would observe that there will be no more water taken from these tanks than will be required for the feed, consequently no more cold water will pass into these tanks than will be necessary for feeding. It is believed this plan will SAVE TEN FEET in the LENGTH of BOILER, and it has been proved to EFFECT a SAVING of rather MORE than ONE-THIRD in the CONSUMPTION of FUEL. These boilers, with flues and tanks, can be supplied on the most reasonable terms.

NOTE.—This plan of Flues and Tank Boiler will be found very beneficial for MARINE ENGINES; the tank would receive the water from the sea, and would not only become hot for feed, but would be the means of preventing in a great measure the salt from passing into the boiler. Where great quantities of hot water are required for other purposes, these tanks will also be found very beneficial. JOHN JEWELL.

Basset Foundry, Devoran, September 30, 1863.

*** Mr. JEWELL is PREPARED to GRANT the ROYALTY to any parties, for certain districts of the United Kingdom.

BASTIER'S PATENT CHAIN PUMP.

APPARATUS FOR RAISING WATER ECONOMICALLY, ESPECIALLY APPLICABLE TO ALL KINDS OF MINES, DRAINAGE, WELLS, MARINE, FIRE, &c.

J. U. BASTIER begs to call the attention of proprietors of mines, engineers, architects armers, and the public in general, to his new pump, the cheapest and most efficient ever introduced to public notice. The principle of this new pump is simple and effective, and its action is so arranged that accidental breakage is impossible. It occupies less space than any other kind of pump in use, does not interfere with the working of the shafts, and unites lightness with a degree of durability almost imperishable. By means of this hydraulic machine water can be raised economically from wells of any depth; it can be worked either by steam-engine or any other motive power, by quick or slow motion. The following statement presents some of the results obtained by this hydraulic machine, as daily demonstrated by use:—

1.—It utilises from 90 to 92 per cent. of the motive power.
2.—Its price and expense of installation is 75 per cent. less than the usual pumps employed for mining purposes.
3.—It occupies a very small space.
4.—It raises water from any depth with the same facility and economy.
5.—It raises with the water, and without the slightest injury to the apparatus, sand, mud, wood, stone, and every object of a smaller diameter than its tube.
6.—It is easily removed, and requires no cleaning or attention.

A mining pump can be seen daily at work, at Wheal Concord Mine, South Sydenham, Devon, near Tavistock; and a shipping pump at Woodside Graving Dock Company (Limited), Birkenhead, near Liverpool.

J. U. BASTIER, sole manufacturer, will CONTRACT to ERECT his PATENT PUMP at HIS OWN EXPENSE, and will GUARANTEE IT FOR ONE YEAR, or will GRANT LICENSES to manufacturers, mining proprietors, and others, for the USE of his INVENTION.

OFFICES, 63, DEAN STREET, SOHO SQUARE.
London, March 21, 1859. Hours from Ten till Four. J. U. BASTIER, C.E.

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Warehouse, 81, Upper Ground-street, London, S.

Prize Medal, International Exhibition, 1862.

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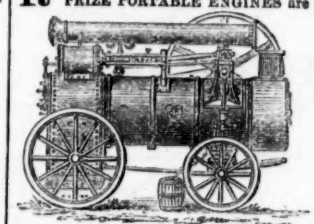

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